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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,360	04/09/2001	Thomas R. Giallorenzi	907.0014USU	9679
29683	7590	12/15/2004	EXAMINER	
HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212			CHOU, ALBERT T	
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,360

Applicant(s)

GIALLORENZI ET AL.

Examiner

Albert T. Chou

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04-09-2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-12 is/are rejected.
- 7) ☒ Claim(s) 6,7,13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1- 5, 8,10 and 11 are rejected under U.S.C. 102(e) as being anticipated by Jou (US Patent Number: 6,389,000).

3. Regarding claim 1, Jou teaches a method for transmitting and receiving data in a multiple carrier CDMA communication system (figures 2-3) and discloses (col. 2, lines 8-10) the CDMA waveform by its inherent nature of being a wideband signal offers a form of frequency diversity by spreading the signal energy over a wide bandwidth (*Defining the system as a combined CDMA and FDMA system*). Jou also teaches the method comprises step of formatting data to Encoder 54 (figure 2; col. 6, lines 6-9), providing the encoded symbols to Variable Ratio Demultiplexer 56 (figure 2; col. 6, lines 16-20), dividing and scrambling the encoded symbols in accordance with a pseudo-noise sequences (figure 2, Long Code Generator 82, Walsh Coding 66a-66c, PN Spread 68a-68c), passing the data to Carrier Modulators 76a-76c with different frequencies (figure 2; col. 9, lines 57-59) and transmitting the signals through Transmitter 78 and Antenna 80 (figure 2; col. 9, lines 60-62) to Receiver 102 (figure 3)

(Using a variable bandwidth waveform with bonded transmitter and receiver that are each agile in both frequency and code to provide a variable bandwidth and variable rate multiple access system).

4. Regarding Claim 2, Jou discloses his invention (col. 1 lines 11-14) for maximizing system throughput and increasing signal diversity by dynamically multiplexing signals onto multiple carriers in a spread communication system (*A method provides an improved concentration efficiency by making a larger pool of bandwidth available to each user*).

5. Regarding Claim 3, Jou discloses that the selected rate of data and frequencies to be transmitted can be obtained by using different length Walsh sequences (col. 5, lines 35-42) and Variable Ratio Demultiplexer 56 to provide the encoded symbols to Carrier Modulators 76a-76c (col. 6, lines 16-26) (*Enables the system to operate in a variable contiguous or non-contiguous bandwidth at a finely variable rate*).

6. Regarding claim 4, Jou teaches the apparatus for transmitting and receiving data in a multiple carrier CDMA communication system (figures 2-3 and Abstract). It is inherent for a CDMA communication system to comprise at least one base site and one subscriber unit. Jou teaches that a base site comprising a Transmitter 78 (figure 2) and further comprising a Long Code Generator 82 (figure 2), PN Spreads 68a-68c (figure 2) and Carrier Modulators 76a-76c (figure 2) (*A base site comprising a transmitter and further comprising a plurality of frequency agile and PN code agile data modulators having an output coupled to a radio channel*) and that a subscriber unit comprising a Receiver 102 (figure 3) and further comprising Carrier Demodulators 106a-106c (figure

3) and PN Despreads (figure 3) 108a-108c (*A subscriber unit comprising a receiver and further comprising a plurality of frequency agile and PN code agile data demodulators*).

7. Regarding claim 5, Jou teaches Control Processor 50 (figure 2) selects the gain factor for each carrier in accordance with the channel condition and the rate of information data to be transmitted on that carrier (col. 9, lines 45-48). Jou also teaches each of Carrier Modulators 76a-76c (figure 2) upconverts the data to a different predetermined frequency (col. 9, lines 57-59). Jou further teaches Switch 104 (figure 3) provides the received signal to a selected Carrier Demodulator 106a-106c in response to a control signal from Control processor 125 (figure 3; col. 10, lines 19-21) (*N modulators and N demodulators each operable for communicating at data rates that are power of two multiples of a basic rate on the a plurality of frequency subchannels within a channel*).

8. Regarding claim 8, Jou teaches that an arbitrary number of frequencies can be obtained by using different length Walsh sequences (col. 5, lines 35-42) and Variable Ratio Demultiplexer 56 to provide the encoded symbols to Carrier Modulators 76a-76c (col. 6, lines 16-26).

9. Regarding claim 10, Jou teaches (figure 2; col. 6, lines 11-15) that although Encoder 54 is a convolutional encoder, the flexibility provided by Jou, essentially any encoding format can be used (*Input data to said plurality of modulators is a puncture convolutional code*).

10. Regarding claim 11, Jou teaches (figure 2; col. 6, lines 11-15) that although Encoder 54 is a rate $\frac{1}{4}$ convolutional encoder with a constraint length of 9, the flexibility

provided by Jou, essentially any encoding format can be used (*Input data to said plurality of modulators is a rate $\frac{1}{2}$, constraint length 7 code*).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 9 and 12 are rejected under U.S.C. 103(a) as being unpatentable over Jou (US Patent Number: 6,389,000).

13. Regarding Claim 9, as explained in the rejection statement of claim 4, Jou discloses all the claim limitation recited in claim 4, the parent claim. Jou does not disclose the decided choices of "*Y (=14) MHz channel and X (=3.5) MHz subchannel*". However, Jou teaches that an arbitrary number of frequencies can be obtained by using different length Walsh sequences (col. 5, lines 35-42) and Variable Ratio Demultiplexer 56 to provide the encoded symbols to Carrier Modulators 76a-76c (col. 6, lines 16-26). It would have been obvious to one skilled in the art to decide the desirable channel and subchannel frequencies given an RF channel bandwidth.

14. Regarding Claim 12, as explained in the rejection statement of claims 4 and 11, Jou discloses all the claim limitation recited in claims 4 and 11, Jou does not disclose "*the puncturing rate is made adaptive to mitigate fading conditions*". However, Jou discloses the flexibility of the Convolutional Encoder 54 essentially allows that any encoding format can be used (col. 6; lines 6-15). It would have been obvious to one

skilled in the art to appreciate that puncturing is used to increase the rate of code and that puncturing rate is made adaptive to mitigate fading conditions.

Allowable Subject Matter


15. Claims 6, 7 and 13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert T. Chou whose telephone number is 571-272-6045. The examiner can normally be reached on 8:30 - 17:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizooou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AC

Albert T. Chou
December 7, 2004


CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
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